# Peerocracy

Mensura mereo demos kratos

Multistage weighed voting mechanism for content validation by a peer review meritocratic trust network.

By Rosu-Gutman Daniel drgutman@gmail.com

document version alfa 0.6

*This text is a work in progress but the core of the voting system is done, at least the informal description. A mathematical/formal description is still needed.*

**Legend:**

*Gray italic text*: Text containing quotes from other works that I believe to be relevant to the subject.
*Light gray italic text*: Redundant or unfinished text that is to be removed in future versions.
*Deep blue italic text*: Temporary text that contains ideas to be explored further in future versions of this article.
Orange text: Placeholder links to articles or texts about things that have to be expanded on in future versions of this article.

## Abstract

In this paper I propose a new type of voting system. It applies a weighing mechanism to select the value of the votes in specific domains and chooses the winner based on approval voting, calculating the sum of weighs of each individual candidate in the particular domains. In order to accurately measure the weighs of the votes (and to implement equality of opportunity) all voters are also candidates.

[...]

# Introduction

All human interaction and social relations (self interest, selection, cooperation, reciprocity, value transactions) revolve around the reputation of the involved parts and thus on measurements of trust (value assessment, confidence). Trust is one of the most important factors that enable the long term, peaceful, cooperation between people, it is the fundamental natural resource (the economic utility of trust)

> *It seems fairly obvious that any form of cooperative activity, including the division of labor, requires the cooperators to trust one another to do their bit, or at the very least to trust the overseer with his whip to do his bit, where coercion is relied on.*
>
> *[..]*
>
> *We are so familiar with the phenomenon of trust that we scarcely notice its presence and its variety. [..] Most of us notice a given form of trust most easily after its sudden demise or severe injury. We inhabit a climate of trust as we inhabit an atmosphere and notice it as we notice air, only when it becomes scarce or polluted.*
>
> *[..]*
>
> *Trust alters power positions, and both the position one is in, without a given form of trust, and the position one has within a relation of trust need, to be considered before one can judge whether that form of trust is sensible and morally decent.*
>
> *(Trust and Antitrust - Annette Baier)*

We've seen the power of rating systems to assess value and to add trust in many organizations, from ebay to uber, from facebook's likes to reddit's up and down votes, rating systems promote good content and weed out the bad one. But not all voting systems are equally valid. Plurality voting for example (also known as first-past-the-post or one-person-one-vote, one of the most widely used system) is considered among academics the worst method there is. One vote per person doesn't offer the full picture, in fact it offers least amount of information about the preferences of the electorate.

No one person can grasp the full complexity of human life. Some people are better informed about a particular subject, some people are more skilled for a certain task. Even a well informed person is usually well informed in particular domains. The more you know about a subject the more your voice should count in that domain. The more your ideas get voted the more reputation you receive on the domains that people voted on and thus the heavier your votes weigh. It is a voting system in which the number of participants and the number of candidates are always the same, thus creating a medium in which everyone can be a winner in his domain of interest.

# The problem

*Since the beginning of life, organisms organized themselves in hierarchies based on different characteristics that were relevant for their survival in the environment in which they reside.*

All living things depend on their environment to supply them with what they need, including food, water, and shelter. Through symbiosis and competition they create an interconnected and interdependent relation throughout the environment.

There are many examples of types of organizations between the members of the same species of superorganisms *(Bert Hölldobler and Edward O. Wilson)*, inside multicellular organisms or even bacteria (microorganisms have revealed diverse complex social behaviors, including cooperation in foraging, building, reproducing, dispersing and communicating *(Crespi, 2001)*). Most of them are usually based on cooperation inside a hierarchy, specialised castes for performing individual tasks and high levels of cell differentiation.

There are two main types of hierarchies, dominance hierarchies that are based on competition of muscle power and physical adaptability, and competence hierarchies that are based on cooperation, task differentiation and social intelligence.

[...]

Humans are social creatures by nature. *While for most of our history we used dominance hierarchies the biggest evolutionary steps were made when new tools for competence hierarchies were created.* Non-kin food sharing, long-distance exchange, and rituals allowed us to adapt to environmental changes. Accumulating, using, and passing down knowledge gave humans an advantage over the other hominid species. They created societies in which they collaborate but they also form hierarchies based on their specialisation and expertise. *"In competence hierarchies a person has to be a good player of iterative games to maintain his position."* (Peterson)

> *"Now, society between human beings, except in the relation of master and slave, is manifestly impossible on any other footing than that the interests of all are to be consulted. Society between equals can only exist on the understanding that the interests of all are to be regarded equally. And since in all states of civilization, every person, except an absolute monarch, has equals, everyone is obligated to live on these terms with somebody; and in every age some advance is made towards a state in which it would be impossible to live permanently on other terms with anybody."*
> *-- Trust - Francis Fukuyama*

Every member wants to have his voice heard, taken into consideration in the decisions that affects them. This was easier to obtain in small communities in which everybody knew everybody else (small tribes and familial societies) and because they trusted each other's knowledge, they knew what to expect from one another. But there is an upper limit to the number of people with whom one can maintain stable social relationships in which an individual knows who each person is and how each person relates to every other person (Dunbar's number varies between 150 and 250 individuals, depending on different field studies). As societies increased in size (cities, countries, federations) the problem of trust became more and more prominent. For that purpose we've created tools that strengthen the social nature, to help us collaborate, more restrictive rules, laws, and enforced norms to maintain a stable, cohesive group. From language to art, from money to conventions, standards and laws, we try to find new ways to communicate that trust.

> *“If I trust you, then I don’t have to take into account how complicated you are, and as long as you’ll do what you say you’ll do then I can take you at your word and that simplifies you and we can act like we can understand each other even tho we don’t.”* -- (*Jordan B Peterson - Biblical Series II: Genesis 1: Chaos & Order*)

Trust is what makes economic exchange possible, it creates the conditions that facilitate economic exchange.

> *“Individual man is born into a socially organized environment. In this sense alone we may accept the saying that society is-logically or historical-antecedent to the individual. In every other sense this dictum is either empty or nonsensical. The individual lives and acts within society. But society is nothing but the combination of individuals for cooperative effort. It exists nowhere else than in the actions of individual men. It is a delusion to search for it outside the actions of individuals. To speak of a society's autonomous and independent existence, of its life, its soul, and its actions is a metaphor which can easily lead to crass errors.*
> *[..]*
> *Society is not merely interaction. There is interaction-reciprocal influence-between all parts of the universe: between the wolf and the sheep he devours; between the germ and the man it kills; between the falling stone and the thing upon which it falls. Society, on the other hand, always involves men acting in cooperation with other men in order to let all participants attain their own ends.*
> *[..]*
> *The course of history is determined by the actions of individuals and by the effects of these actions. The actions are determined by the value judgments of the acting individuals, i.e., the ends which they were eager to attain, and by the means which they applied for the*
> *attainment of these ends. The choice of the means is an outcome of the whole body of technological knowledge of the acting individuals.*
> *--- Ludwig von Mises - Human Action*

Around the world, most of the accepted decision-making methods are composed of different national institutions gathered in centralised structures that are supposed to work for the good of the majority that they represent. Several ideologies stood out across the years but all of them tried to organize the interaction of the members in pretty much the same way, as a simplified system, and failed to take into consideration all the nuances of human life and possible interactions, and ended up creating stratified societies in which individuals feel isolated and alienated. (Communism, Liberalism, Nationalism)

Most organisations are based on Industrial,19th century ideas. They tend to be top-down, centralized, non-participatory and non-transparent, optimizing for efficiency in order to increase return on investment or equality of outcomes. They are susceptible to politicization, groupthink and coercion and thru limited participation and oversimplification they become biased, slow to react to new information and oligarchic.

> *"Bureaucracy happens. If bureaucracy happens, power rises. Power corrupts."*

*In modern society, socialism and democracy are both structurally impossible - the very principle of organisation made oligarchy the inevitable result of any organized collective endeavour.*

*[..]*

*Oligarchy is best understood as a particular distribution of illegitimate power that has become entrenched over time.*

*[..]*

*Current forms of organization, regardless of how democratic they try to be at their inception, will eventually and inevitably develop oligarchic tendencies because large organizations create bureaucracies in order to maintain their efficiency. As they becomes larger—many decisions have to be made daily that cannot be made by large numbers of disorganized people. For an organization to function effectively, centralization has to occur and power will end up in the hands of a few. Those few — the oligarchy — will use all means necessary to preserve and further increase their power.*

*Because until now the technology to allow an ever growing number of individuals to come together, present problems and solutions, make decisions and reach consensus did not exist, delegation was necessary thus increasing specialization — to the development of knowledge bases, skills and resources among a leadership — which further alienates the leadership from the rank and file and entrenches the leadership in office.*

*[..]*

*Generally speaking, there are two steps that must be taken to show that oligarchy has been avoided: first, one must show that the majority is not structurally prevented from ruling - that is that the group has a democratic structure of one kind or another. Second, one must show that within this structure, power is in fact distributed broadly enough that no minority (formal or informal) can effectively maintain ruling control.*

*-- Darcy K. Leach, The Iron Law of What Again? Conceptualizing Oligarchy Across Organizational Forms, Sociological Theory, Volume 23, Number 3, September 2005, pp. 312-337(26)*

*Men are not infallible; they err very often. It is not true that the masses are always right and know the means for attaining the ends aimed at. "Belief in the common man" is no better funded than was belief in the supernatural gifts of kings, priests, and noblemen. Democracy guarantees a system of government in accordance with the wishes and plans of the majority. But it cannot prevent majorities from falling victim to erroneous ideas and from adopting inappropriate policies which not only fail to realize the ends aimed at but result in disaster. Majorities too may err and destroy our civilization. The good cause will not triumph merely*
*on account of its reasonableness and expediency. Only if men are such that they will finally espouse policies reasonable and likely to attain the ultimate ends aimed at, will civilization improve and society and state render men more satisfied, although not happy in a metaphysical sense. [..] Man is free in the sense that he must daily choose anew between policies that lead to success and those that lead to disaster, social disintegration, and barbarism.”*
*--- Ludwig von Mises - Human Action*

*We are witnessing a decline of the trust in politics, institutions and governments.*
*[Public trust in the government remains near historic lows. Only 18% of Americans today say they can trust the government in Washington to do what is right “just about always” (3%) or “most of the time” (15%).*
*-- Public Trust in Government: 1958-2017 DECEMBER 14, 2017 - Pew Research Center - U.S. Politics & Policy]*

With the improved access to information, it became obvious that the institutions that we have in place have been derailed by private interests or have fallen prey to petty corruption. The toolkit that we’ve been using is not enough, it works on a lower level, trying to treat the individual effects of the problems that we’re confronted with without looking at the common causes.

The inequality has risen around the globe, especially in the more advanced countries, while the economic growth rates have fallen. Populism, nationalism and extremism are making a comeback across the political spectrum while the environment is degrading at an alarming rate.

The decision makers are too far removed from the effects of their decisions, they become more interested in holding the decision power rather than following the purpose for which they were elected. Monetary and decisional power become concentrated in the hands of an entrenched minority.

> *"During the forty-year period from 1970 to 2010, there was an enormous upsurge in the number of democracies around the world. In 1973, only 45 of the world's 151 countries were counted as "free" by Freedom House [..] The following generation saw momentous political change, with democracies and market-oriented economies spreading in virtually every part of the world except for the Arab Middle East. By the late 1990s, some 120 countries around the world—more than 60 percent of the world's independent states—had become electoral democracies. [..] Underlying these changes in political systems was a massive social transformation as well. The shift to democracy was a result of millions of formerly passive individuals around the world organizing themselves and participating in the political life of their societies. This social mobilization was driven by a host of factors: greatly expanded access to education that made people more aware of themselves and the political world around them; information technology, which facilitated the rapid spread of ideas and knowledge; cheap travel and communications that allowed people to vote with their feet if they didn't like their government; and greater prosperity, which induced people to demand better protection of their rights.*
>
> *The third wave crested after the late 1990s, however, and a "democratic recession" emerged in the first decade of the twenty-first century. Approximately one in five countries that had been part of the third wave either reverted to authoritarianism or saw a significant erosion of democratic institutions. Freedom House noted that 2009 marked the fourth consecutive year in which freedom had declined around the world, the first time this had happened since it established its measures of freedom in 1973.*
>
> *At the beginning of the second decade of the twenty-first century, malaise in the democratic world took several distinct forms. The first was the outright reversal of democratic gains that had occurred in countries such as Russia, Venezuela, and Iran, where elected leaders were busy dismantling democratic institutions by manipulating elections, closing down or buying independent TV and newspaper outlets, and clamping down on opposition activities. Liberal democracy is more than majority voting in elections; it is a complex set of institutions that restrain and regularize the exercise of power through law and a system of checks and balances. In many countries, official acceptance of democratic legitimacy was accompanied by the systematic removal of checks on executive power and the erosion of the rule of law. In other cases, countries that seemed to be making a transition from authoritarian government got stuck in what the analyst Thomas Carothers has labeled a "gray zone," where they were neither fully authoritarian nor meaningfully democratic.6 Many successor states to the former Soviet Union, like Kazakhstan and Uzbekistan in Central Asia, found themselves in this situation. There had been a broad assumption in the years following the fall of the Berlin Wall in 1989 that virtually all countries were transitioning to democracy and that failures of democratic practice would be overcome with the simple passage of time. Carothers pointed out that this "transition paradigm" was an unwarranted assumption and that many authoritarian elites had no interest in implementing democratic institutions that would dilute their power.*
>
> *A third category of concern has to do not with the failure of political systems to become or remain democratic but rather their failure to deliver the basic services that people demand from their governments. The mere fact that a country has democratic institutions tells us very little about whether it is well or badly governed. This failure to deliver on the promise of democracy poses what is perhaps the greatest challenge to the legitimacy of such political systems."*
>
> *-- Francis Fukuyama - The Origins of Political Order from Pre-human Times to the French Revolution*

We have to keep in mind that no one person can truly have the entirety of knowledge of another person. Why then should someone decide for any other person and why should we assume that one person could decide for many others or even all the other people. Decisions within the governance model should be guided by the good and respect of the whole humanity.

Even those who believe in the power of the market, are starting to realize that the economy is unable to self optimize fast enough to solve general problems because the individual incentives do not align with the collective goals.

The status quo created a trust deficit that breeds disengagement, frustration and apathy.

*2018_Edelman_Trust_Barometer_Global_Report_FEB*

*Because people do not trust each other they treat every interaction as a zero sum game and they ignore future interactions, thus the shadow of the future, the probability of future interaction gets ignored. If you expect to interact with somebody in the future you treat them differently than you do when you don't expect to interact with somebody in the future. Your cooperation will be less. It is informed by available and the future  history of the transactions between the parts.*

This is a collective action problem and it can be fixed only by a bottom up approach, not top down.

If you could easily measure the trust between groups or individuals you could bypass many tools on which we rely in our day to day interaction in order to create a self sustainable society and create a method to organize people on the vastest scale imaginable.

What you need is to give the power to establish expertise to the people by allowing them to verify each other's integrity by themselves, a tool that selects *based on the ability to articulate truth, the ability to be competent and the ability to make proper moral judgements (Peterson)*. It needs an uncontroversial, generally accepted method of evaluating experts. If disputing parties can agree about who the experts are and about their relative degrees of expertise, we can use experts to adjudicate the dispute. *(Cognitive Islands and runaway echo chambers - C. Thi Nguyen)*

This can be done by using the same technique that allowed the scientific community, the experts, to establish their credibility and their credentials: peer review rating.

[*** *the expert, the professional is the user by the fact that the <knowledge, intelligence in the form of reliable information> is distributed across the whole gradient of the culture permeating from the top academia to the people without scholar accreditation.*
*[bottom-up method for creating a web of trust across the sum of digitized human knowledge]* ***]

## The Idea

*To measure and reach consensus you have to identify the experts, the people who study the issue and publish their research to be analyzed and reviewed by other people who are experts in the same field (peer review).*

Measuring trust would need a tool that has certain characteristics:

- It has to be compatible with as many human types of interaction as possible. This can not be obtained unless the domains where trust is measured are generated on the fly by the users. They also have to have customizable hierarchies.

- It has to retain a level of simplicity that could be understood by anyone independent of language, social background or age.

- It has to allow transactions, creation, subtraction (removal), liquidation and the dissolving (elimination, destruction) of trust.

- It has to be totally decentralised in order not to become susceptible to manipulation and censorship.

- It has to be totally transparent (all transactions that affect the amount of trust that is available in the system have to be public)

Based on the success of the scientific method i concluded that the best technique of reaching consensus is by peer review. Only by evaluating the work by the people with similar competence to the producers of the work you can really measure the trust that it deserves, maintain the standards of quality and improve performance.

> *"The intellectual methods of science do not differ in kind from those applied by the common man in his daily mundane reasoning. The scientist uses the same tools which the layman uses; he merely uses them more skillfully and cautiously. Understanding is not a privilege of the historians. It is everybody's business. In observing the conditions of his environment everybody is a historian. Everybody uses understanding in dealing with the uncertainty of future events to which he must adjust his own actions. The distinctive reasoning of the speculator is an understanding of the relevance of the various factors determining future events. And-let us emphasize it even at this early point of our investigations-action necessarily always aims at future and therefore uncertain conditions and thus is always speculation.*
> *Acting man looks, as it were, with the eyes of a historian into the future."*
>
> *-- Ludwig von Mises - Human Action*

Peer-review is the most advanced method of evaluation of competence, it has been proven to work by history and we can see it's effects in the advances of technology and, as I later realized, it was the basis of human cooperation since the dawn of human civilization. Lately new techniques of open peer review proved invaluable for collaboration in peer production (eg. wikipedia though considered inaccurate it has been proved just as accurate as other closed encyclopedias). [citation]

## Implementation

The system has to be totally distributed, for it's adequate running it should not use any type of central authority for any of its facets.

1. This type of rating system should be applied to a social network. In its ideal form, it should be a browser plug-in/extension that uses an off-site comment system (similar to Facebook or Disqus) which allows the users to attach input (text and hash-tags) and value judgment (to vote on the hash-tags) on any web-page. For example, while browsing the internet, you could insert in the webpage, at

the end, a comment, or select the appropriate part of the text and insert a comment there, or just add a series of tags that you believe that are fit for that text, and any other visitors that use the same plug-in would be able to reply and vote your input. This would also be shared via notifications as direct link in your feed and to your followers or the followers of the relevant tags.

This would create a decision making tool for large groups of people, a trust mesh to be applied across the world wide web. Because of the distributed characteristic of the voting system and its universality, in order to ensure it’s security it should use a totally distributed protocol like IPFS (InterPlanetary File System is a protocol and network designed to create a content-addressable, peer-to-peer method of storing and sharing hypermedia in a distributed file system) for communication to create a public accessible DAG (Directed acyclic graph is a directed graph that securely supports multiple blockchains to run in parallel increasing the speed and malleability of the network). The data should be stored on the individual devices of the users that take part in the transaction with backups on the devices of at least a few other trusted users that are connected to the original users plus on the devices of any users that follow the hashtags that were used in the transaction. The data contains the values prior to the transaction, the values after the transaction and at least several history states of the transactions that allowed the users that take part in the transaction to use those particular values. This would in turn create a publicly verifiable history of the transactions in the system with enough redundancy to make it accessible all the time and recoverable when needed. The platform should be treated as a public utility and not implicate itself in monitoring, control or censorship of the published content. Only the people that use it, can decide what is the appropriate use in the way they use it, by self censorship and moderation.

2. A Wikipedia type enciclopedia in which truly anyone can edit any article as long as they show expertise in that domain. This does not have to be a rival project, the voting system could be implemented in the current user management and for the current editors cast, thus opening it to participation from outside.

3. A political party that uses this system for the decision making throughout, one that doesn't try to sell a rigid ideology in the elections, one in which the most knowledgeable person will be pushed to the top based on their ability to tell the truth, their competence and moral judgements and not the by their ability to spin politics.

4. Any large scale organization in which there is a need of consensus across many domains and many types of small decisions.

5. A society with no powerful central form of government and in which the legislative, executive and administrative decisions are distributed between all members that form it based on expertise and independent of political affiliation.

6. Global governance decision making system.

# Intuitive description

The system is composed of 3 classes: users, posts(blocks) and #tags,

**A user** can be any person that creates an account. The user has an unique identifier and a block of data attached to it. In order to defer from Sybil attacks there is a small proof of work on new user creation.

Users can follow each other, when a user makes a public transaction he sends notifications to all his followers. The notifications of the people a user follows are displayed in the interface as a timeline.

**A post** or a block can can be created by an user and can contain any type of data that is shared to the system (an image, a link, a piece of text, a quote from a different post or any combination of the above) It has an unique identifier, the timestamp, the creator, the data and the list of tags associated with it by the creator. Any edit or reply attach themselves as a new block in a chain from the original post. In order to defer from spam attacks there is a small proof of work on new post creation, edit or vote.

**A hashtag** (#tagname) is a type of block that can be created by an user and contains a system wide generic identifier (based on the name), a timestamp, the value and several states of transactional history from the user's interaction with that hashtag (this is done to ensure data redundancy across the platform).

Hash-tags can be nested (attached to other tags) in order to form trees in which generally worded tags can have different values. #colour under #painting and #color under #photography are two different tags with different reputation.

Hashtags can be followed by users in order to receive constant updates about subjects of interest. Filters can be applied based on the reputation attached to the specific hashtags for timeline customization.

A transaction is any type of an action that a user takes inside the system, be it a new post, a comment, adding a tag or voting.

**The voting is done up and down** ↑↓

A vote up is 10% of that user's value for that particular #hashtag and a vote down is 1% of that user's value for that particular hashtag. This creates a 10 to 1 ratio that encourages the buildup of trust rather than the destruction of trust.

> *Not all the things that thrive when there is trust between people, and which matter, are things that should be encouraged to thrive. Exploitation and conspiracy, as much as justice and fellowship, thrive better in an atmosphere of trust. There are immoral as well as moral trust relationships, and trust-busting can be a morally proper goal.*
> *(Trust and Antitrust - Annette Baier)*

A user cannot select the value of the vote that he is casting.

The user's reputation on the voting hash-tag does not diminish when voting.

Every transaction, post, vote, edit or other type of action, that is taken into account for the weighing of reputation is recorded in a DAG (Directed acyclic graph) and is publicly available. In order to ensure data redundancy across the platform the transactions are sent as they happen to several more contacts (trusted friends of the users that participate in the transaction and people that follow that users or the tags that are used in that transaction)

Any other user can comment (add another post as a reply/child to the original post), vote on a particular hash-tags of the original post or add new hash-tags. The votes are attached to the hash-tags of the post, not to the post itself (you do not vote a post, you vote the tags attached to that post). As more users vote on the original post, the reputation received by the individual tags increases or decreases the reputation of the creator of the post. That person can now use the reputation gathered to vote on those particular tags on different posts.

All users start with reputation 1 on a new hash-tag (a hashtag that was not attached to that user until then)
If a users reputation on a particular hash-tag reaches 1 that particular hash-tag gets removed from that user's list of hash-tags

If the reputation on a particular hash-tag falls below 1 the particular hash-tag gets attached to that user's list of hash-tags as a negative hash-tag.

Negative hash-tags decrease slower, when downvoted, than the 10:1 ratio that is used on the positive hash-tags (the lower the reputation for that hash-tag is the slower it decreases -- *compared to the total negative reputation that exists in the system for that tag OR the total personal reputation of that user*)

The transfer of reputation from a post's hashtag to the creator's hashtag follows a logarithmic curve. The more reputation for that hashtag that user has, compared to the total reputation existent in the system for that hash-tag and the number of users in the system, the slower it grows.

[*** in case #value doesn't decreases fast enough, because you only use 10% of what you gain each step: The reputation gained by one user from the votes of another user can not be used to increase the reputation of the second user in a sequential vote. The first user can only increase the reputation of the second user using the reputation gained from different users.]

Once the vote is cast the user can remove his vote by voting the opposite way

## Special cases:

- Public groups [^group-name] of users can be formed and subscribed to. Custom rules of admission can be set in place as in verifiable ID in order to create boards for discussion and consensus for political parties where you need to make sure that the votes cast are from individual people who reside in a specific territory.

- While private posts (limited access) are allowed, voting on them does not modify the public reputation of the user that created it. Only public posts can influence a user's voting power.

- Private reputation is allowed for registered groups. Registered groups can co-author public posts and divide the received reputation based on the group's private reputation dynamics.

- Anonymous public posting is possible but the votes received by the post do not transfer to the user that created the post.

- Anonymous voting is allowed but it does not reflect the voter's reputation for that hash-tag nor it increases the reputation of the creator of the post. Anonymous voting is allowed only once per user. [new user creation has proof of work attached to it]

- Ideograms (emojis) can be used as hash-tags (#unicode) for which there is no need for a pound symbol (#) to precede them when displayed in the interface. These can be used in conjunction with the custom default hash-tags (a set of custom or user's most used hashtags that are quickly accessible, in the interface, when viewing a post) to create quick reactions to posts.

- #total

The sum of user's current value across all the attached tags.

## Money / Credits / Coins

More research has to be done for this special case before implementation. the idea of trust is not compatible with the power to buy votes thus the tokens created by this network are not be used to increase the value of any other hashtag except for #money (you can not use your value from the #money tag to vote on any other tag except #money)

In the first couple of versions of the implementation of Symposium (the codename that I choose for this voting system implementation) should have this hashtag locked, at least until a decent number of users have been using and testing the system. The voting system must not be associated with the idea of a digital currency, the fact that it has that option available is a happy accident not a core feature and should not be treated as a cryptocurrency.

#money

- voting is is restricted to uvote with a selected amount. You can not vote a #money tag with the percent part of your #money value in order to increase the seller's #money value.

- the amount of money that a user has is the sum of the values across all that users tags, thus the #total becomes a spendable resource, it increases with the increase of the value that the user receives on his tags and decreases when he transfers them to other people.

- In order to mitigate fluctuations in the values of the tags the update of the #money tag should be timed (once every 24 hours for example. The time interval might be changed by the user by adding a tax, the faster the update interval the bigger the tax)

Buyer:
Voting #money towards a seller extracts 100% of the value used from the #total (and 10% out of every individual hash-tags that the buyer has -- this is still to be tested IRL transactions to see how it influences the dynamics of the market)
Multiple users trying to buy the same item resolve thrum a Vickrey–Clarke–Groves auction.

Seller:
Asking price starts from the #total reputation of the post as tagged by the user and changes with sequential votes from the other users on the attached tags.

Each transaction costs 1%
To ensure a constant deflation of the currency supply on sequential transactions -- this helps to balance out the inflationary side of the system and incentivises the users to create value by adding to the system rather than just exchanging the already existing resources
An automated method of taxation can be implemented - transaction tax for social purposes - it can be directed to public groups for solving social issues

## Incentives:

A user can add a hashtag to a post that he did not created himself and gain a percentage (10% or more) of the reputation that that hash-tag gains extracting from the reputation that the creator of the post gains from the added hash-tag. The transfer of value follows the aforementioned logarithmic curve. This creates an opportunity for users that are not content creators to gain reputation by supplementing the insufficiently tagged posts or when they see a connection to a new domain that was not taken into account by the user that created the post. It also incentivises the content creators to cover all the tags that could be connected to that specific post

# Formal description

Unfortunately I do not have a statistics or math background and I can not provide at the moment a more formal description than the above one. I am searching for ways in which I could approach this problem but it might take a while.

The Condorcet winner can be chosen at any point in time by taking a snapshot and comparing the distribution of the values of individual tags. If there is a tie the first next vote that changes the situation is decisive.

Advantages:

Because you do not vote on participants but you select them from a multitude of participants based on individual's rating, the more users are in the system and the more tags each user has, the less chances of a "Condorcet_paradox" to occur.

To check:

circular voting - graphs of the curve of the total reputation grow in a system in which everyone starts with the same reputation and they vote each other in one direction or at random. --

https://en.wikipedia.org/wiki/Condorcet_paradox

## Limited Example

[placeholder]

*user A has rating of 1 in #painting and 1 in #photography and 1 in #music*

*he creates a post and attaches (10% based on his previous value) 0.1 in #painting, 0.1 in #photography and 0.1 in #music*

*user B has a rating of 10 in #painting and 5 in #photography and 1 in #music*

*he votes on #painting and #photography*

*the post's value increases with 1 in #painting and 0.5 in #photography, #music does not change*

*at the end user A has rating of 2 in #painting 1.5 in #photography and 1 in #music*

## Monetization

A monetization scheme can eventually be put in place by inserting unobtrusive but easily identifiable opt-in ads, using the public available data of the user for targeting. The revenue of such ads can be split between the user that sees the ad, the company that maintains the implementation of the rating system and other social causes.

Also, monetization could be introduced by offering secure storage space for private companies. While this might seem to contradict the distributed nature of the system it doesn't allow the said company to control the data the same way that a central company that offers the software and the storage at the same time, does in exchange for ad space. The free version should be compatible and able to use the cloud space from DropBox and GoogleDrive by encrypting the archive.

## Implementation issues and possible criticism

The effectiveness of an identity system that is to be used is limited by the method that the users choose to authenticate into the network.

It has to use a form of proof of work for the creation of new accounts in order to deter Sybil attacks.

In a Sybil attack, the attacker subverts the reputation system of a peer-to-peer network by creating a large number of pseudonymous identities, using them to gain a disproportionately large influence. A reputation system's vulnerability to a Sybil attack depends on:

1. how cheaply identities can be generated .
2. the degree to which the reputation system accepts inputs from entities that do not have a chain of trust linking them to a trusted entity .
3. whether the reputation system treats all entities identically.

By introducing a small proof of work on new user creation one deterrent is added. Even without it, from the way it operates, the system offers an incentive to keep the same id(s) that one user created and used in order to fully profit form gains of the received votes while offering the possibility to vote anonymously without the need to create a new user. (1)

The fact that the whole history of transactions is public, also makes identification punishment of malicious users easy other users by downvoting. (2)

By default, the reputation of a new user is very small compared to older users thus their influence is limited in the overall system. (3)

### Echo chambers and Cognitive Islands

People are seldom experts in one field without being interested in anything else.

*Many domains are interlinked, so one can perform what Phillip Kitcher calls "indirect calibration" (Kitcher 1993, pp. 320–323). That is, some fields are interwoven with other fields; thus, we may be able link up subtle fields with more* *obvious ones. For example, nuclear engineers rely on the results of particle physics, and nuclear engineering has some rather dramatic tests, whose failures are available to the inexpert. The evidence of functioning nuclear reactors and nuclear bombs leads me to trust nuclear engineers, and the nuclear engineers trust and depend on the work of the particle physicists. So, though I can't make any direct judgments about the reliability of particle physics for myself, I can connect it up to another field which I have some capacity to assess. I trust particle physics because the nuclear engineers trust it; here, the subtle field is linked to an obvious field. I can use that linkage in several ways. First, I can use a linked obvious field to establish trust in the subtle field as a whole. Second, once I establish that trust in the field as a whole, I have some reason to trust its licenses and rankings of its own experts.*

*(Cognitive islands and runaway echo chambers: problems for epistemic dependence on experts -- C. Thi Nguyen)*

One of the best features of this voting system is that the trust that one shares in the expertise of a certain person is interconnected with the trust that that person shares with others, thus creating a network in which you don't need to personally know someone if one of the people who trust him is a person that you trust directly.

[...]

Most of our interactions are driven by our need to tell our opinion even about things that we don't completely understand, and while some would say that that's not a good thing, I consider that that's a good first step, be corrected by those that are more informed and be given sources from which to learn. Hiding your ignorance might make you look intelligent but it also blocks you from learning how much you don't know.

1. One relies on other experts to check and reinforce one's own abilities and beliefs.
2. One evaluates others expertise through a deployment of one's own abilities and beliefs.
3. There is no check on failure for either individual or collective expertise whose application is independent of one's own expert abilities.

### Criticism from people who usually familiar with the subject

- Haven't you seen the "Black Mirror" or "Community" episode about voting? It always ends badly.
- First of all that's a movie and the concepts that it can explain are limited by the runtime of the episode. Second, the voting system that they used in the movie is a very limiting one. Giving stars to people based on

what their behaviour you think should be is not a good way of ascertaining their expertise in anything. Also known as score voting [.. limitations ..] The only worse method of voting, the one that extracts even less info from the participants is one-person one-vote aka first-past-the-post, because it always ends up forcing the electorate to choose the lesser of two evils.

- So you want to do a population rating like China? (https://en.wikipedia.org/wiki/Social_Credit_System)
- No, that's controlled by a central authority. Their ratings are not based on personal interaction but on decision made by algorithms. The system is implemented and based on fully top down interaction. My system is implemented bottom up based and based on lateral interaction. The Chinese system can and has been used to exclude people based on habits (too much online gaming reduces ones score for example), personal shopping habits, and a variety of other personal acts that have no impact on the wider community.

- It's too complex, people won't want to use it.
- Money is complex, otherwise you wouldn't have to explain children how to use them. We have schools and ministries trying to understand how money and monetary tools work and we still don't understand them. Reputation is intuitive and unlike money is specific and traceable leaving very little space for hidden misconduct.

## Conclusions

I believe that this meritocratic voting system could become the backbone of many other tools.
It can solve the problem of fake and misleading news and allow users to tag data across the web in order to be easier to use it in AI applications and statistics thus helping with several Big Data problems (finding the signal in the noise, inaccurate data and lack of skilled workers)

It can also create a platform for collective action and consensus. Imagine for example a political party that takes decisions not based on a rigid ideology or the will of a few representatives detached from the people who elected them or those who are affected by the decisions, but on the constant input of all it's members, based on their expertise as judged by each other and in which the representatives are in constant contact with the represented and can be rewarded or punished constantly, not once every several years. Or even better, a society in which there are no elections and all decisions are made by a true participatory democracy.

# Background and personal history

For a very long time I've been thinking of a way in which the problems of social interaction of large groups could be solved.
Growing up in the eastern bloc, at the end of the Communist era and during the years of transition to the market economy gave me the opportunity to form a critical view of the mechanics of social organisation methods, both communist and capitalist. The constant struggle with the corruption that permeates all institutions galvanized my opinion that all the current systems are limited and fail to provide a decent option to solving the complex web of issues that a modern society is confronted with.

Even tho the subject was one that I always pondered around 10 years ago (shortly after the 2008 financial crisis) an idea started to take shape in my head when I tried to find a way in which one could clean up the information from the noise in an Internet forum. Most forums (or any type of social community as a matter of fact) end up in disarray because it is very hard to keep track about who-knows-what and what is relevant to whom and who decides what should be done. Basic decision making and trust management.

I came up with a weighed voting system that used the reputation of its members to assess the value of the information posted. A decentralized meritocratic hierarchy, that rewards its users based on their merit rather than wealth, status or the will of a central authority.

The more I thought about the tool, the more use cases I saw. I ended up having to learn about Sociology, Anthropology, Philosophy, Economy and many other subjects because I saw that the tool that I have created, while easy to comprehend and simple in its basic form, was in fact incredibly efficient at the management of trust. During my exploration I saw great thinkers across all domains reaching the same conclusion: “All complex systems require cooperation to operate” and “At the core of all human interaction is a decision about trust” This motivated me to push forward even if most of the feedback I received tended to be negative at start. I saw that people understand how the system should work but that they are quick to pass a negative judgement even if they do not have arguments to sustain them. It became apparent that it wasn’t that they didn’t trusted the idea but that they were alienated by the current systems to a degree to which they considered that there is no way a new and better method could be created, a very nihilistic outlook.

This system is not infallible, as any tool it can be used for good as well as it can be used for bad, but it will create a way in which we can measure our expertise in a visible way.  It allows people to trust each other without the need for a central authority that decides who is right or wrong.

> *People who trust each other and are good at working with one another can adapt easily to new conditions and create appropriate new organisational forms.*
> *-- Trust - Francis Fukuyama*

It can help us pool our resources to clean up the transfer of information across the web and to reach consensus. Our differences are not our weakness, they are our strength but if there is too much diversity there is no common language. Without a method to communicate trust fear takes control and it transforms into violence.

It is each and everyone's responsibility to create a better path, we are all together in this.